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4/30/03

**PATENT**  
Attorney Docket No. 7393/71602

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

GLITTENBERG et al.

Group: 1731

Application No.: 09/884,420

Examiner: Fortuna

Filed: June 20, 2001

For: STARCH COMPOSITIONS AND THE USE THEREOF  
IN WET-END OF PAPER PREPARATION

**DECLARATION**

**RECEIVED**

APR 28 2003

TC 1700

Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

I, Peter Leonhardt, am one of the inventors of record in this application for U.S. patent.

1. I am informed that the U.S. Patent Examiner has cited U.S. Patent No. 6,413,372 and am further informed that the Examiner has stated "[t]he effective filing date of the material of Example 1 [of U.S. Patent No. 6,413,372] being 20 April 1999."

2. We conceived of our slightly cationic compositions containing an anionic starch and a cationic starch in which one of the starches is a waxy maize starch before April 20, 1999.

3. Our inventions were (or were at least going to be) tested and evaluated before April 20, 1999. A schedule for such testing and evaluation was made before April 20, 1999. We were planning pilot plant testing before April 20, 1999 and were scheduled to receive samples for testing and evaluation before April 20, 1999. This is evidenced by the attached document, which has been redacted to remove dates (all before April 20, 1999) and confidential business information. Item "3) samples sent for lab and pilot plant

U.S. Patent Appln. No. 09/884,420 - GLITTENBERG et al.

evaluation" refers to samples for testing our invention. The samples were prepared prior to April 20, 1999. The Exhibit reports "two new samples produced at pilot plant scale this week" and that they "will be analyzed and sent to you next week." The latter "two new samples" related to our diligent on-going efforts to evaluate further our inventions. The "two new samples" were prepared prior to April 20, 1999.

4. We were working diligently on our invention, including sample preparation and either testing or scheduling testing of samples in a time period before April 20, 1999, and spanning such date, which work was related to confirming that our inventions would work their intended purpose.

5. I hereby declare that all statements made herein of my own knowledge are true, and that all statements made herein on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity or enforceability of the application or any patent issued thereon.

  
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Peter Leonhardt

20.03.2003  
Date



**Cerestar**  
A company of  
ERIDANIA BORDI-SAY

ERIDANIA BORDI-SAY  
VILVOORDS RESEARCH &  
DEVELOPMENT CENTRE

## MEMORANDUM

Centre of Expertise Starches

Havenstraat 84  
B-1800 Vilvoorde, Belgium

Tel. 32/2/257.06.11  
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To : P. Leonhardt/ R. Tipett

C.c. : M. Berckmans  
N. Becker  
M. Farrar  
D. Glittenberg  
P. Pauwels  
A. Verbiest  
H. Van Grinderbeek  
R. Roux

From : V. Dufrasne

Date :

Subject : Improved dry - and wet strenght. (P 216/7).  
TPC (simulation) and samples for pilot plant tests

Dear Peter,

Please find here, the different informations that you need.

1) TPC for the ratio 60% anionic waxy starch (062NY) and 40% for cationic starch 05906.

Please find in the attached table the TPC simulation for this new ratio 062NY (60%)/05906 (40%) based on the prices obtained from I

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## **2) Investment.**

This product is a blend of 40% C\*Bond 05906 with 60% of 062NY.

062NY is an anionic modified waxy starch produced by reaction with succinic anhydride. Succinic anhydride is a powder and has to be added in a constant way in order to maintain the pH constant to have a good substitution yield. An i

of

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## **3) Samples sent for lab and pilot plant evaluation.**

So, we sent you 1 - 2 kg of 2 samples:

- 1) 062NY (succinic anhydride with sodium carbonate)
- 2) 062NY (maleic anhydride with sodium carbonate)

Maleic anhydride is much more cheaper than succinic anhydride and if the applications properties are not affected, it could be an advantage for

As we already mentioned, product modified with maleic anhydride is more difficult to dewater than the product produced with succinic anhydride.

When the succinic (or maleic) anhydride is added to the slurry, even with a slow rate, the pH drops quickly and it is difficult by addition of diluted caustic soda to maintain a constant pH. A bad control of pH out of range 7 - 9, will induce a bad substitution yield. In order to control in a better way the drop in PH during the addition of anhydride, sodium carbonate was mixed with the succinic (or maleic) anhydride reagent. The pH drop was controlled.

So, the product 1) was produced by addition of 1% (on starch ds) of succinic anhydride and 1% (starch ds) of sodium carbonate. Same strategy for product 2) with maleic anhydride.

We also could see that the anionic charge of the two modified starches were different: starch modified with maleic anhydride has a lower anionic charge. Please find here in the attached Excel document the PCD curves.

Can you analyse these two products in application tests.

As promised, we will send you tomorrow 15 kg of 2 new samples produced at pilot plant scale this week in order to perform tests for . . . The products will be analysed and the characteristics will be sent to you next week.

The two products will be called:

062NY (succinic anhydride) pilot plant week  
062NY (maleic anhydride) pilot plant week

If you need more informations, do not hesitate to contact us.

Kind regards,

Véronique